

Name: _____

Date: _____

Period: _____

Unit 2 Test - Practice Test

Patterns and Functions

Identify the independent and dependent variables in the situation. Then find a reasonable domain and range.

Situation: A museum charges \$10 for admission. In two hours they will have between 100 and 200 people enter the museum.

Independent Variable:

of people

Dependent Variable:

total money

Domain:

100 - 200

Range:

\$1000 - \$2000

The relationships in the tables below are functions. Define your variables and write a function rule to describe the relationship.

X	Y
1	6
2	8
3	10
4	12

 $\begin{matrix} > +2 \\ > +2 \\ > +2 \end{matrix}$

Number of weeks	Total Savings
1	\$45
2	\$75
3	\$105
4	\$135

 $\begin{matrix} > +30 \\ > +30 \\ > +30 \end{matrix}$

$$y = 2x + 4$$

Let S = total savings
Let W = # of weeks

~~$$S = 30W + 15$$~~

$$S = 30W + 15$$

Square Roots

Between what two consecutive integers is each square root? **NO CALCULATOR!**
(3 points)

 $\sqrt{70}$

8 & 9

 $\sqrt{110}$

10 & 11

 $\sqrt{275}$

16 & 17

Simplify each square root. **NO CALCULATOR!**

$\sqrt{169}$

13

$-\sqrt{289}$

-17

$\sqrt{\frac{81}{100}}$

Simplify each square root. Round your answer to the nearest hundredth.

$-\sqrt{56}$

-7.48

$\sqrt{955}$

30.90

$\sqrt{362}$

19.03

Distance Formula

Given the two coordinates, find the distance between the two points.

$(3, -8)$ $(-5, 1)$
 x_1, y_1 x_2, y_2

$$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$\sqrt{(-5 - 3)^2 + (1 - (-8))^2}$$

$$\sqrt{8^2 + 9^2}$$

$$\sqrt{64 + 81}$$

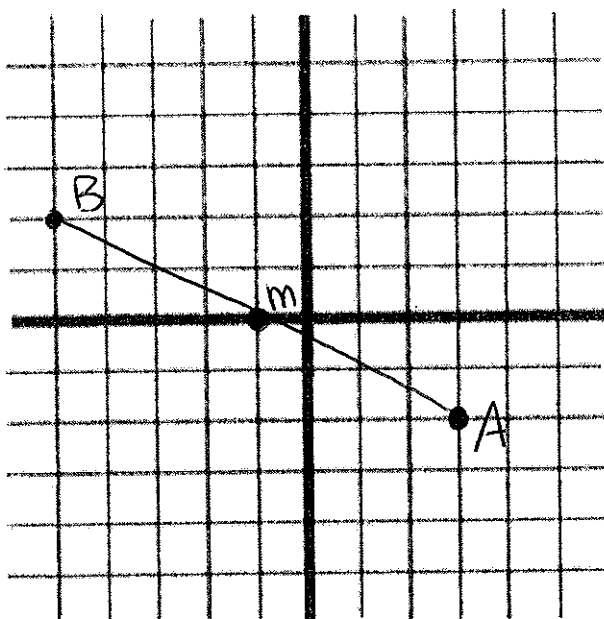
$$\sqrt{145}$$

$$\approx 12.04$$

Midpoint Formula

Plot the following points on the coordinate plane.

A (3, -2) B (-5, 2)



Calculate the midpoint.

$$\begin{matrix} (3, -2) & (-5, 2) \\ x_1 & y_1 & x_2 & y_2 \end{matrix}$$

$$\left(\frac{x_2 + x_1}{2}, \frac{y_2 + y_1}{2} \right)$$

$$\left(\frac{-5+3}{2}, \frac{2+(-2)}{2} \right) \left(\frac{-2}{2}, \frac{0}{2} \right) \boxed{(-1, 0)}$$

Plot the midpoint on the line segment - on the coordinate plane.

Why was Pythagoras important?

He "discovered" something special about the sides of a right triangle. One of the oldest ancient greek mathematicians we know.

Describe Pythagoreans.

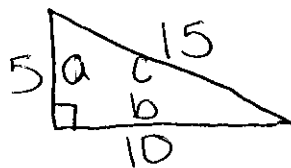
- long hair
- traveled and taught
- men and women Pythagoras' lessons
- barefoot
- no beans

In words, what is the Pythagorean theorem?

The ~~the~~ area of the squares made from the two smaller sides added together make up the area of the square made from the largest side of a right triangles.

Pythagorean theorem

A triangle has side lengths 5 in, 15 in, and 10 in. Is this a right triangle?



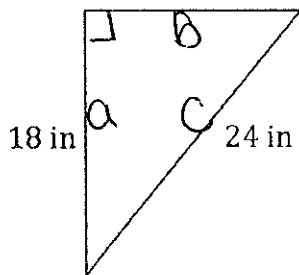
$$5^2 + 10^2 = 15^2$$

$$25 + 100 = 225$$

$$125 \neq 225$$

No. This does not make a right triangle

Find the length of the missing side.



$$a^2 + b^2 = c^2$$

$$18^2 + b^2 = 24^2$$

$$324 + b^2 = 576$$

$$-324 \quad -324$$

$$\sqrt{b^2} = \sqrt{252}$$

$$b \approx 15.9$$

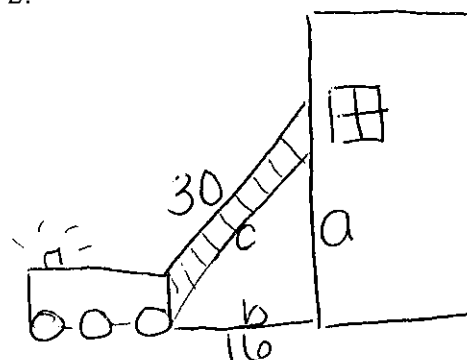
Use the Pythagorean theorem to solve the following situation.

Situation. A fire truck parks next to a building such that the base of the ladder is 16 feet from the building. The fire truck extends its ladder 30 ft in the air to the tallest window. How high is the window?

Step 1:

known	unknown
<ul style="list-style-type: none"> 30 ft. ladder truck is 16 ft. away from building 	<ul style="list-style-type: none"> how high the window is from the ground

Step 2:



Step 3:

$$a^2 + b^2 = c^2$$

$$a^2 + 16^2 = 30^2$$

$$a^2 + 256 = 900$$

$$\sqrt{a^2} = \sqrt{644}$$

$$a \approx 25.4 \text{ ft}$$

Step 4:

The window is about $25\frac{1}{2}$ ft. high from the ground.